25. DISTRIBUTION AND ECOLOGY OF *POLYURA AGRARIA* SWINHOE (LEPIDOPTERA : NYMPHALIDAE) IN INDIA

The taxon *Polyura agraria* Swinhoe was treated as a form of *Polyura athamas* Drury until its elevation to species rank by Smiles (1982). Evans (1932) treated it as *Polyura athamas agrarius* Swinhoe from south India, while the north Indian population of *agraria* was placed under *athamas athamas,* with the qualification that it was very variable. Subsequent authors also followed this arrangement.

P. agraria can be distinguished from *P. athamas* by the more acute apex of the forewing, the broader pale area and the two sub-apical pale spots on the forewing. Larsen (1987) notes that *agraria* is smaller and paler than *athamas.* While it may appear paler due to the broader pale area, males of *agraria* may be marginally smaller than the average *athamas,* but many small *athamas* are smaller than *agraria.* Larsen (*op. cit.*) also notes that in some areas, it is more difficult to separate the two than in the Nilgiris.

As a result of the taxonomic confusion, there is not much information available on the distribution, habits and habitat preferences of *P. agraria.* According to D'Abrera (1985), the global distribution of *agraria* is over most of the Oriental Region, to Java, Sulawesi and the Flores and that of *athamas*, also over most of the Oriental Region, from India to the Philippines and Java.

Within India, *agraria* is known from the Western Ghats southwards from Maharashtra (Gaonkar, 1996), the Nilgiri Hills (Larsen, 1987), the Nagari Hills of the Eastern Ghats north of Chennai (Madras) (Alan Sharman, *in litt.*), Kulu (Smiles, *op. cit.*) and from Kumaon in the Himalaya (*pers. obs.*). Its appearance in the last two localities, together with its extralimital distribution, can be interpreted to mean that this insect also occurs in Nepal, the eastern Himalaya and northeast India, though there do not seem to be any records so far. Given its resemblance to *athamas* and the confusion of the past, this is not surprising and there is every likelihood that a thorough investigation will reveal the presence of this butterfly. Larsen's observation that these two species are more difficult to separate in some areas might have special reference to the eastern Himalaya.

Polyura athamas, which seems to be sympatric, is also found in Gujarat (Gaonkar *op. cit.*) and in Sri Lanka, where *agraria* has not been found so far. In the Himalaya, both *athamas* and *agraria* have been recorded as far west as Kulu in Himachal Pradesh.

Larsen (*op. cit.*) notes that *agraria* seems to be rare in the Nilgiris, even at low elevation. He obtained only three of them out of well over a hundred *athamas* sightings. The three *agraria* were recorded from Kallar, at 457 m above msl. The Nagari Hills north of Chennai, where *agraria* was also recorded, do not rise above 1000 m elevation.

In Kumaon, it appears to be well established in the Terai, around 450 m above msl where I have recorded it in October. There are two records from 1500 m near Bhimtal in Nainital dist. where it is a rare straggler. Both the records are from April in different years. Therefore, it seems to be bivoltine in northern India.

P. athamas seems to have a wider altitudinal distribution. It is found from low elevation to 1900 m in the hills of south India and up to 2700 m above msl in the Himalaya (Wynter-Blyth, 1957). *P. athamas* is as common up to 1500 m above msl as it is in lower hills while *agraria* does not seem to be established in the hills.

It follows that although *athamas* is known to breed in the hills, where I have recorded it in April and from June to October *agraria* does not, given its scarcity at 1500 m above msl and the tattered condition of the two specimens recorded,

further prove that they are merely stragglers from lower elevations.

Wynter-Blyth (*op. cit.*) records eleven confirmed larval host plants of *athamas,* all belonging to Leguminosae. Given the recent distinction of *agraria,* it must be clarified whether both species feed on the same plants or whether some of the eleven recorded host plants are exclusively fed upon by either species.

Both species evidently like warm areas in regions of heavy rainfall, with *athamas* also colonising regions of moderate rainfall such as Gujarat. *P. agraria* seems to be essentially a low elevation species, while *athamas* is more flexible. Both species have been recorded at over-ripe fruit and faeces (*pers. obs.*) and there is every likelihood that *agraria* will also be attracted to other decomposing substances favoured by the genera *Charaxes* Ochsenheimer and *Polyura* Billberg, including *P. athamas.* Wet sand will probably prove an attractant, as it is to other members of the genus.

Other behaviour of *agraria* seems to be the same as *athamas*, e.g. aggressive territoriality in males, rapid flight, and the fondness for basking on prominent perches.

Larsen (*op. cit.*) proposes the trivial name Anomalous Common Nawab for *P. agraria.* Given its relative scarcity, the 'Common' is misleading, so it would be best to drop it leaving 'Anomalous Nawab'. It seems the 'Common' was retained to imply its close relation with the Common Nawab *P. athamas,* but this relationship is in any case so obvious that it hardly requires to be included in the trivial name.

In conclusion, I would like to point out that although *P. agraria* appears to be scarce in certain localities, the main reason that so little is known about it is that it has been overlooked among the commoner *P. athamas.* It is not in any sense 'threatened', 'endangered' or on the verge of extinction.

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26. NEW RECORD OF AN ARCTIC SPECIES *HOLOPEDIUM GIBBERUM* ZADDACH (CRUSTACEA : CLADOCERA) FROM CHHANGU LAKE, SIKKIM

(*With three text-figures*)

The family Holopedidae is so far known to occur only in the mountain lakes of Europe and North America. From this family only two species, *Holopedium gibberum* and *H. amazonicum* have been recorded so far. The occurrence of *Holopedium gibberum* Zaddach in